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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/972,163	10/04/2001	Donald F. Albert	AAC-1 CIP	5897
1473	7590	05/20/2004	EXAMINER	
FISH & NEAVE 1251 AVENUE OF THE AMERICAS 50TH FLOOR NEW YORK, NY 10020-1105			VO, HAI	
			ART UNIT	PAPER NUMBER
			1771	

DATE MAILED: 05/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/972,163

Applicant(s)

ALBERT ET AL.

Examiner

Hai Vo

Art Unit

1771

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16, 19-41, 43-93, 95-116 and 118-139 is/are pending in the application.
- 4a) Of the above claim(s) 39, 52, 54-83, 86-89, 113, 127 and 129-139 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16, 19-38, 40, 41, 43-51, 53, 84, 85, 90-93, 95-112, 114-116, 118-126 and 128 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 37 is rejected under 35 U.S.C. 102(b) as being anticipated by Kaschmitter et al (US 5,789,338). Kaschmitter discloses a carbon aerogel having a density of 100 to 600 kg/cm<sup>3</sup>, pore size less than 0.1 micron (column 8, lines 43-44, column 11, lines 10-12). The gel is treated with acetic acid to promote additional crosslinking of the gels (column 10, lines 35-37). Likewise, the acetic acid is making covalent modifications within the aerogel and the aerogel contains the acetic acid too. Therefore, it is the examiner's position that Kashmitter anticipates the claimed subject matter.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-16, 19-24, 84, 85, 90-93, and 95-100 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hrubesh et al (US 6,005,012) in view of Coronado et al (US 6,087,407). Hrubesh teaches an organic, monolithic aerogel

substantially free of crack (example 4, column 1, line 29). The monolithic aerogel is prepared using a non-critical drying process (example 4) and has a density of from 20 to 300 kg/m<sup>3</sup> (column 4, line 2), a surface area at least of 200 m<sup>2</sup>/g (column 3, line 58) and a porosity from 85% to 90% (column 4, lines 2-4) within the claimed ranges. Since the claim recites an organic monolithic aerogel having a surface area less than about 200 m<sup>2</sup>/g, the surface area value disclosed by Hrubesh is within Applicants' claimed range. The organic aerogel is dried in less than 24 hours (example 4). The organic aerogel has the average pore size less than 5000 angstroms or 0.05 micron (column 3, line 54). Likewise, it is clearly apparent that the organic aerogel has a pore area less than 0.2 sq. micron. Hrubesh teaches a small pore area formed from a mixture of phenolic-novolac resin dissolved in furfural and the mixture further dissolved in a propanol (column 3, lines 38-40). Hrubesh teaches that the organic aerogel can be further carbonized (column 3, lines 42-43). Hrubesh does not specifically disclose the monolithic aerogel having its smallest dimension greater than about 3 inches. Therefore, it is necessary and thus obvious for the skilled artisan to look to the prior art for the monolithic aerogel having its smallest dimension greater than about 3 inches. Coronado teaches a flexible organic aerogel having excellent thermal and acoustic properties and being used in refrigerators, energy absorber utilization (column 2, lines 20-24). Like Hrubesh, Coronado discloses a supercritical extraction process in preparation of the composite aerogel. It is noted that the aerogel of the present invention has been used in refrigerators,

energy absorber utilization. Therefore, it is not seen that the aerogel of Coronado would have the dimension different from the aerogel of the present invention in order to achieve sufficient performance. Additionally, Coronado also teaches that the thickness of the composite aerogel can be fabricated in various thicknesses in accordance with the needs of specific applications (column 4, lines 53-56). Therefore, in the absence of unexpected results, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the monolithic aerogel having its smallest dimension greater than about 3 inches because such dimension would make the monolithic aerogel suitable for use in refrigerators.

Hrubesh as modified by Coronado does not specifically disclose that the organic, monolithic aerogel does not shrink substantially. However, it appears that the organic aerogel of Hrubesh as modified by Coronado meets all the physical properties recited by the claims, pore size, density, porosity, pore area, surface area and dimensions within the claimed ranges. Further, the shrinkage of the organic aerogel is dependent on chemistry of the materials from which it is formed and the organic aerogel of Hrubesh as modified by Coronado is made of the same materials as Applicants' aerogel (phenolic-novolak resin dissolved in furfural). Therefore, it is not seen that Hrubesh's organic aerogel have been performed differently from Applicants' aerogel. This is in line with *In re Spada*, 15 USPQ 2d 1655 (1990). Products of identical chemical composition can not have mutually exclusive properties.

Hrubesh as modified by Coronado does not specifically disclose that the organic, monolithic aerogel is formed in situ. It is the examiner's position that the organic aerogel of Hrubesh/Coronado is identical to or only slightly different than the claimed article prepared by the method of the claim, because both articles are formed from the same materials, having all the physical properties required by the claims. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or an obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985). The burden has been shifted to the applicant to show unobvious differences between the claimed product and the prior art product. *In re Marosi*, 218 USPQ 289,291 (Fed. Cir. 1983). It is noted that if the applicant intends to rely on Examples in the specification or in a submitted Declaration to show non-obviousness, the applicant should clearly state how the Examples of the present invention are commensurate in scope with the claims and how the Comparative Examples are commensurate in scope with Hrubesh and Coronado.

5. Claims 37, 40, 41, 43-51, 115, 116, 118-126 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hrubesh et al (US 6,005,012) in view of Kaschmitter et al (US 5,789,338). Hrubesh does not specifically disclose an organic aerogel comprising acetic acid. Kaschmitter teaches an organic aerogel being treated

with acetic acid to promote additional crosslinking of the gels (column 10, lines 35-37). Likewise, the acetic acid is making covalent modifications within the aerogel and the aerogel contains the acetic acid too. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ acetic acid in the aerogel motivated by the desire to increase the degree of crosslinking and thus stabilize the network.

6. Claims 25-36 and 101-112, are rejected under 35 U.S.C. 103(a) as being unpatentable over Hrubesh et al (US 6,005,012) in view of Coronado et al (US 6,087,407) as applied to claim 2 above, further in view of Pekala (US 5,744,510). Hrubesh does not specifically disclose the thermal conductivity of the organic monolithic aerogel. Therefore, it is necessary and thus obvious for the skilled artisan to look to the prior art for the suitable thermal conductivity of the organic aerogel. Pekala teaches the organic aerogel having a thermal conductivity from 0.0045 to 0.0065 W/m-k after evacuation (column 5, line 34, figure 3) meeting the specific range required by the claims. In an absence of unexpected results, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the organic aerogel having a thermal conductivity instantly claimed, motivated by Pekala and expectation of successfully practicing the invention of Hrubesh. Such a low thermal conductivity is also taught by the prior art to make the aerogel suitable for use as an electrode, which is important to the invention of Hrubesh, thus further suggesting the modification.

7. Claims 38 and 114 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hrubesh et al (US 6,005,012) in view of Coronado et al (US 6,087,407) as applied to claims 1 and 90 above, further in view of Kaschmitter et al (US 5,789,338). Hrubesh does not specifically disclose an organic aerogel comprising acetic acid. Kaschmitter teaches an organic aerogel being treated with acetic acid to promote additional crosslinking of the gels (column 10, lines 35-37). Likewise, the acetic acid is making covalent modifications within the aerogel and the aerogel contains the acetic acid too. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ acetic acid in the aerogel motivated by the desire to increase the degree of crosslinking and thus stabilize the network.
8. Claims 53 and 128 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hrubesh et al (US 6,005,012) in view of Coronado et al (US 6,087,407) as applied to claims 1 and 90 above, further in view of Mayer et al (US 5,908,896). Hrubesh does not specifically disclose the organic aerogel comprising a surfactant. Mayer, however, teaches an organic aerogel comprising a surfactant to stabilize the suspension. This is important to the expectation of successfully practicing the invention of Hrubesh, thus suggesting the modification. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ a surfactant in the aerogel motivated by the desire to stabilize the suspension.



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9. Claims 37, 40, 41, 43-51, 115, 116, and 118-126 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pekala (US 5,744,510) in view of Kaschmitter et al (US 5,789,338). Pekala discloses a small pore area formed from a mixture of phenolic-novolak resin dissolved in furfural and the mixture further dissolved in a propanol. The small pore area is prepared during a sol-gel polymerization process (abstract). The low density microcellular material having a pore size of 0.01 microns is in form of a complex prepared during a sol-gel polymerization process (abstract). Pekala does not specifically disclose the low density microcellular material comprising an acetic acid. Kaschmitter, however, discloses the production of the organic aerogel being treated with acetic acid to promote additional crosslinking of the gels (column 10, lines 35-37). Likewise, the acetic acid is making covalent modifications within the aerogel and the aerogel contains the acetic acid too. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ acetic acid in the aerogel motivated by the desire to increase the degree of crosslinking and thus stabilize the network.
10. The art rejections in the Office Action have been withdrawn in view of the present amendment and response (pages 19, 23, 26, and 27 of the amendment filed on 02/26/04).
11. Applicant's arguments with respect to claims 1-16, 19-38, 40, 41, 43-51, 53, 84, 85, 90-93, 95-112, 114-116, 118-126, and 128 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai Vo whose telephone number is (571) 272-1485. The examiner can normally be reached on M,T,Th, F, 7:00-4:30 and on alternating Wednesdays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Hai Vo*

HV